METHODS AND SYSTEMS ACQUIRING IMPULSE SIGNALS

ABSTRACT OF THE DISCLOSURE

Methods and systems for acquiring a received impulse signal packet including a plurality of repeating short acquisition code sequences and at least one ratchet code sequence following a last one of the plurality of repeating short acquisition code sequences, the repeating short acquisition code sequences defined by a short acquisition code, the at least one ratchet code sequence defined by a ratchet code, and each ratchet code sequence greater in length than each repeating short acquisition code sequence. The method includes the step of concurrently searching the received impulse signal packet for the short acquisition code sequence in accordance with a frame time offset and each of a plurality of acquisition code offsets. The frame time offset is adjusted after each time the short acquisition code sequence is not found during a search. Tracking of the received impulse signal packet is initiated immediately after the short acquisition code sequence is found. The method also includes the step of concurrently searching the received impulse signal packet for a ratchet code sequence in accordance with each of a plurality of code boundaries. A delimeter is then searched for and found. Data payload follows the delimeter. Further, a threshold detector using an acquisition logic algorithm comprising four fully programmable threshold equations is provided herein.